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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ISAMU OHSHITA, TERUICHI WATANABE, GEN SUZUKI, KUNIZO OGOSHI, and TERUO TOHMA

Appeal 2009-004244
Application 10/620,354
Technology Center 2800

Decided: September 28, 2009

Before JOSEPH F. RUGGIERO, CARLA M. KRIVAK, and BRADLEY W. BAUMEISTER, *Administrative Patent Judges*.

KRIVAK, *Administrative Patent Judge*.

Concurring Opinion filed by *Administrative Patent Judge* BAUMEISTER.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from a final rejection of claims 4-8 and 10-16. An oral hearing was conducted on September 15, 2009. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

STATEMENT OF THE CASE

Appellants' claimed invention is an electroluminescent display device. The device includes pixels located above a substrate. Each pixel includes two light-emitting elements (R: red; and B: blue). The chromaticity values of the red and blue light-emitting elements, E_R and E_B, are specifically selected such that when the chromaticity values are plotted on a CIE[1] xy chromaticity diagram, a line segment connecting the two plots passes through a circle area of a 0.1 radius with a center in a pure white coordinate of 0.31, 0.316 on the CIE chromaticity diagram (*see e.g.*, Fig .2). Restated, if the light emitted from blue and red light emitting elements are adjusted to the appropriate respective luminosities (or "gradations"), the resultant combined color will be pure white or close to pure white.

In order to independently control the light-emitting elements' luminosities, the light emitting element pairs are arranged in a plurality of independent array patterns (*see* Figs. 6A-6D; Spec. 22:3-21). Each light emitting element has a corresponding electrode, from a pair of electrodes, connected thereto (Spec. 17:10-11; Figs. 4, 5) that controls the gradation of each color within the pixel by changing the driver current or voltage (Spec. 4:17-21, 15:8-10). By independently controlling the gradation of each color, any chromaticity or color on the line segment between the plots E_{R1} and E_{B1} may be displayed, thus providing high quality quasi-color images (Spec. 4:17-21, 17:24-25, 24:6-8).

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[1] Commission Internationale de L'Eclairage or International Commission on Illumination

Independent claim 16, reproduced below, is representative of the subject matter on appeal.

16. An organic electroluminescent display device comprising:

a plurality of pixels located above a substrate, each pixel being formed of two light-emitting elements and producing only two different colors of predetermined chromaticity values,

wherein each light-emitting element is formed by interposing a luminescent layer containing organic electroluminescent materials between a pair of electrodes, at least one electrode of the pair of electrodes comprises a plurality of independent array patterns corresponding to the light-emitting elements,

wherein a mixture of the two different colors produces colors falling within a line segment between two different colors by controlling each gradation of the two light-emitting elements in a CIExy chromaticity diagram,

wherein a part of the color falling within the line segment produce colors falling within a circular area of a 0.1 radius with a center in a pure white coordinate of 0.31, 0.36 in the CIExy chromaticity diagram, and

wherein the two light-emitting elements are driven by different electric currents or voltages to achieve a quasi-color display.

REFERENCES

Ogura	US 2002/0070663 A1	Jun. 13, 2002
Matthies	US 6,498,592 B1	Dec. 24, 2002
Kobayashi	US 6,628,067 B2	Sep. 30, 2003 (filed Feb. 23, 2001)

The Examiner rejected claims 4-8 and 10-16 under 35 U.S.C. § 103(a) based upon the teachings of Ogura, Kobayashi, and Matthies.

Appellants contend that Ogura, Kobayashi, and Matthies cannot be combined. Appellants contend that Ogura only emits light of two colors, rather than falling within the line segment that produces colors falling within a circular area of a 0.1 radius with a center in a pure white coordinate of 0.31, 0.36[2] in the CIE xy chromaticity diagram; Kobayashi can only emit white light due to its electrode configuration and electrical driving conditions; and Matthies merely teaches different voltages provided at different times to maintain brightness. (App. Br. 17-18; Reply Br. 7-8)

ISSUE

Did Appellants establish the Examiner erred in finding that the combination of Ogura, Kobayashi, and Matthies would result in a display device where only two colors may be combined to selectively to produce either a resultant white light or any of the additional colors falling anywhere within a line segment between the two colors in a CIE xy chromaticity diagram by controlling the gradation of each of the two light-emitting elements?

FINDINGS OF FACT

1. Appellants' claimed organic electroluminescent display device includes pixels formed by two light emitting elements and producing different colors of predetermined chromaticity values (cl. 16; Spec. 20:2-6).

2. By controlling the gradation of the two light emitting elements (R, B) in Appellants' invention, a mixture of two different colors falling

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[2] Appellants alternatively use the CIE coordinate 0.31, 0.316 in the Specification. *See e.g.*, Spec. 20:6; Fig. 2.

within a line segment between E_{R1} and E_{B1} is produced (Spec. 24:6-8). Then, the two light-emitting elements are driven with different electric currents or voltages to achieve a quasi-color display (Spec. 15:6-10, 23:3-9, 24:13-15) by providing independently formed first display electrodes for each light emitting element (R, B) (Fig. 5).

3. Ogura teaches a passive matrix and active matrix light emitting device (¶ [0009]). A cathode or electrode of the device is arranged in a stripe shape vertical to the page (¶ [0166]).

4. Kobayashi teaches an organic electroluminescent white backlight source by combining, for example, blue and yellow (col. 10, ll. 46-47). A white light is obtained by simultaneously lighting luminous colors in a plurality of luminous regions using a single light source. (Abstract)

5. Matthies teaches an all electronic compensation system that continually adjusts the brightness of individual pixels to compensate for aging by varying the voltage to adjust the current (col. 11, ll. 1-3), thus maintaining a constant brightness without manual adjustment (col. 11, ll. 33-35). This calibration of brightness allows the individual pixels to be calibrated to display brightness levels consistent across the entire dynamic range of the display (col. 11, ll. 55-61).

PRINCIPLES OF LAW

"[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability." *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). If the Examiner's burden is met, the burden then shifts to Appellants to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the

basis of the evidence as a whole and the relative persuasiveness of the arguments. *Id.*

ANALYSIS

The Examiner rejected claims 4-8 and 10-16 under 35 U.S.C. § 103(a) based upon the teachings of Ogura, Kobayashi, and Matthies. The Examiner finds that Ogura teaches all the features of Appellants' claimed invention except for specifically teaching that two different colors are mixed to produce a white color (Ans. 3-4). The Examiner states Kobayashi teaches that the mixture of blue and yellow will inherently produce a white color (Ans. 4; FF 4). The Examiner also finds neither Ogura nor Kobayashi specifically teaches different colors being driven by different currents or voltages (Ans. 4), but that Matthies teaches an organic electroluminescent display device that color corrects for any differential aging of regions by individually controlling the current passing through different regions of the device (Ans. 4-5; FF 5).

Appellants agree with the Examiner that Ogura does not teach mixing two different colors to produce white and that neither Ogura nor Kobayashi teaches different colors driven by different currents or voltages (App. Br. 15). Appellants then assert that Kobayashi merely teaches mixing blue and yellow to produce a white light used for backlighting (App. Br. 16; FF 4). Further, Kobayashi simultaneously applies the same voltage to the organic electroluminescent elements due to their common anode and cathode (App. Br. 16; Reply Br. 6). Appellants contend that Matthies merely applies different voltages V0, V2 to pixels at different times T0, T2 to maintain brightness of the elements due to aging for maintaining their brightness

(App. Br. 17; Reply Br. 7; FF 5). Thus, Matthies fails to teach or suggest driving two light-emitting elements with different electric currents or voltages for achieving a quasi-color display. (App. Br. 17; Reply Br. 7).

Because Kobayashi teaches only an emitted white light due to its electrode configuration and Matthies only teaches applying different voltages at different times to pixels for maintaining brightness, neither of these references teaches the features for which the Examiner cited them. That is, combining Kobayashi with Matthies would not cure the deficiencies of Ogura and would not result in a display device that: 1) produces colors falling within a line segment between two different colors; or 2) controls each gradation of the two light-emitting elements by applying different electric currents or voltages to the two light emitting elements to achieve a quasi-color display, as claimed.

CONCLUSION

Appellants have established the Examiner erred in finding that the combination of Ogura, Kobayashi, and Matthies would result in Appellants' claimed display device.

DECISION

The Examiner's decision rejecting claims 4-8 and 10-16 is reversed.

REVERSED

BAUMEISTER, Administrative Patent Judge, CONCURRING

I join the majority in reversing the Examiner's obviousness rejection of claims 4-8 and 10-16. However, I would reverse the rejection on a different basis. Specifically, one of ordinary skill in the art cannot reasonably understand the metes and bounds of independent claim 16. As such, the Examiner could not have reasonably concluded whether claim 16 is anticipated or rendered obvious by any potential prior art.

Independent claim 16 recites *inter alia*, "a pixel formed of two light emitting elements . . . wherein each light-emitting element is formed by interposing a luminescent layer containing organic electroluminescent materials between a pair of electrodes, *at least one electrode* of the *pair of electrodes* comprises *a plurality of independent array patterns* corresponding to the light-emitting *elements*" (emphasis added). Restated, a *single* light emitting element contains organic material sandwiched between and a pair of electrodes. One electrode (or alternatively both electrodes) of this single light-emitting element, in turn, comprises a plurality of independent array patterns (i.e., plural lower electrodes).[3] The plural independent array patterns, in turn, correspond to the *two* light emitting

[3] The Specification states in relation to prior-art figure 1 that the first display electrodes 5 are "of independent array patterns each corresponding to the R[ed], G[reen] and B[lue] light-emitting elements." Spec. 2; Fig. 1. In turn, the Specification uses the term "first electrode" to refer specifically to the *lower* electrode. *See e.g.*, Spec. 17 (stating, "On each of the individual *first* display electrodes 14, a different organic electroluminescent film 20 is formed for each color, and further a *common second* display electrode 16 is formed thereon" (emphasis added). *See also*, figures 4 and 5 (depicting independent lower electrodes 14 and a single upper electrode 16 that is common to both light emitting elements of the pixel).

elements. Viewing one light-emitting element as a single unit and further viewing one electrode of this light-emitting element as a part of this unit, claim 16 effectively recites that a part [one electrode] of a single unit [one light-emitting element] comprises a plurality of units. This is simply a non-sequitur.

From the context of Appellants' Specification, it seems possible that Appellants might have intended the claim language to alternatively recite, "a pixel formed of two light emitting elements . . . wherein each light-emitting element is formed by interposing a luminescent layer containing organic electroluminescent materials between a pair of electrodes, at least one electrode of the pair of electrodes comprises [sic: is one of] a plurality of independent array patterns corresponding to the light-emitting elements." *See* Spec. 17. But if this were, in fact, the intended meaning of the claim language, an additional issue may be raised: Is the language of amended claim 16 supported by the originally filed Specification?[4]

The Specification seems to only disclose a pixel having (1) two lower electrodes 14 that are separately provided for each light-emitting element of the pixel, and (2) an *upper* electrode 16 that is *common* to both light-emitting elements of the pixel. Spec. 17, Figs. 4-5. Appellants' Specification does not seem to further disclose that separate, individual *upper* electrodes may be respectively provided for each light-emitting element of the pixel. As such, the originally-filed Specification does not appear to provide support for the possible interpretation of claim 16, "a pixel

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[4] Claim 16 was first added by amendment more than 3 years after the application was originally filed. *See* Response Under 37 C.F.R. § 1.121 (filed Oct. 10, 2006).

formed of two light emitting elements . . . *at least one electrode* of the pair of electrodes comprises [sic: is one of] a plurality of independent array patterns corresponding to the light-emitting elements." That is, the claim language "at least one electrode" reads on two potential scenarios: either (1) only one electrode is one of a plurality of independent array patterns; or alternatively (2) both electrodes are. The Specification seems to provide support for the former scenario. It is unclear where the Specification provides support for the latter scenario.

I do not note that one possible interpretation of this undecipherable claim is potentially unsupported by the originally-filed Specification for the purpose of reaching a decision on that issue. Rather, I point out this concern to demonstrate why, notwithstanding that the noted interpretation would render claim 16 understandable, it would be improper to assume that Appellants intended this particular interpretation. That is, absent any basis at all for doing so, it seems unreasonable to interpret claim 16 in a manner such that the claim scope would be unsupported by the originally-filed Specification. Instead, such an interpretation seems to be speculative at best.

For that matter, it would be improper for us to speculate on any potential interpretation of claim 16. "[T]he patent drafter is in the best position to resolve the ambiguity in the patent claims." *Halliburton Energy Servs, Inc. v. M-I LLC*, 514 F.3d 1244 at 1255 (Fed. Cir. 2008). *See also, In re Steele*, 305 F.2d at 862 (holding that the Examiner and the Board were wrong in relying on what at best were speculative assumptions as to the meaning of the claims and basing a rejection under 35 U.S.C. § 103 thereon). It suffices for us to conclude as a threshold matter that one of

ordinary skill in the art can not reasonably understand the metes and bounds of independent claim 16.

For the forgoing reasons, I join the majority in reversing the Examiner's obviousness rejection of claim 16. The Examiner could not have reasonably concluded whether claim 16 is anticipated or rendered obvious by the cited prior art. Furthermore, because none of dependent claims 4-8 and 10-15 clarifies the ambiguity of claim 16, I would reverse the Examiner's obviousness rejection of claims 4-8 and 10-15 as well.

babc

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